

THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1989

R.F. BRETHERTON¹ and J.M. CHALMERS-HUNT²

¹ Folly Hill, Birtley Green, Bramley, Guildford, Surrey GU5 0LE

² 1 Hardcourts Close, West Wickham, Kent BR4 9LG

NINETEEN EIGHTY-NINE proved eventually to be a very good year for immigrants. Numbers of most species were small until mid-July but then rose progressively through August and September and reached very high levels in late October, with some overlap into November. The very sunny summer helped both the observation and the local breeding by early arrivals, though the prevalence of clear nights kept down numbers of moths which attended light traps. It is not clear how far local breeding contributed to numbers in the autumn, but it was sufficient to make it difficult to define the precise timing of immigrations of many species, which certainly continued on a very large scale. An outstanding feature was the abundance of the Wainscot moths, with White-speck (*Mythimna unipuncta* Haw.) and the White-point (*Mythimna albipuncta* D. & S.) especially prominent.

Another feature of the year was the appearance suddenly in great numbers in Essex, Norfolk and elsewhere of species which have not previously been regarded as immigrants. These included the Common Wainscot (*Mythimna pallens* L.), the Tineids *Yponomeuta evonymella* L. and *Y. rorella* Hb., *Ethmia terminella* Fletcher, and the Noctuid Beautiful Golden Y (*Autographa pulchrina* Haw.), of which 72 appeared on a single night in Orkney. The question whether some or all of these were due to local population explosions or to immigration is still under discussion, and they have not been listed in Annexe II of this paper. But it can be noted here that a species new to the British list, *Etiella zinckenella* Treitschke, was trapped at Bradwell-on-Sea, South Essex on 23rd October by A.J. Dewick, along with several certainly immigrant species. Other species, well spread in their dates but in outstanding total numbers, were the Red Admiral (*Vanessa atalanta* L.) and the Vestal (*Rhodometra sacraria* L.).

The rarities included the Pyrales *Antigastra catalaunalis* Dup., *Uresipita polygonalis* D. & S., *Maruea testulalis* Geyer and *Hellula undalis* Fab. 1989 was the best year ever for *undalis* (only two previous records). Also notable were the butterflies Berger's Clouded Yellow (*Colias alfacariensis* Berger) and Long-tailed Blue (*Lampides boeticus* L.); macro moths Tawny Wave (*Scopula rubiginata* Hufn.), Striped Hawk-moth (*Hyles livornica* Fabr.), Silver-striped Hawk-moth (*Hippotion celerio* L.), Great Dart (*Agrotis crassa* Hb.), Tunbridge Wells Gem (*Chrysodeixis acuta* Walk.), Flame Brocade (*Trigonophora flammea* Esp.), Orache Moth (*Trachea atriplicis* L.) and Bloxworth Snout (*Hypena obsitalis* Hb.). From the Channel Islands were Pine-tree Lappet (*Dendrolimus pini* L.), Oak Processionary (*Thaumetopoea processionea* L.) and Guernsey Underwing (*Polyphaenis sericata* Esp.). Most of these were only in single examples.

Table I. COMMONER IMMIGRANTS 1989
Dateable records only; approximate. Britain only.

	<i>C. cardui</i>	<i>V. atalanta</i>	<i>C. croceus</i>	<i>M. stellatarum</i>	<i>A. ipsilon</i>	<i>P. saucia</i>	<i>A. gamma</i>	<i>U. ferrugalis</i>	<i>N. noctuella</i>	<i>P. xylostella</i>
January	3	3	-	-	1	1	6	-	-	-
February	-	-	-	-	-	-	-	-	-	-
March	2	16	-	2	24	2	8	-	2	-
April	10	27	-	2	33	1	4	-	1	1
May	28	28	4	4	22	9	89	1	1	6
June	27	73	2	14	26	5	104	17	5	1
July	50	214	21	54	819	10	672	46	67	61
August	148	545	90	89	714	56	1461	174	204	23
September	42	645	35	48	1147	191	1855	69	155	7
October	10	86	19	34	551	105	332	95	128	10
November	11	18	13	1	145	12	51	48	1	-
December	-	1	-	-	1	-	-	-	-	-
Totals 1989	331	1656	184	248	3483	392	4582	450	564	109
Totals 1988	1383	674	17	22	521	28	5640	251	1830	343

NOTE. The numbers of dateable records are considerably smaller than estimates of the total records received.

Of the butterflies the Clouded Yellow reversed its scarcity in 1988 to show 1989 as probably the best year since 1983. Two were seen on 5th May in the Cuckmere Valley, Sussex and a few widely scattered singles in June and July. Major influxes began on 2nd August and continued as new arrivals or survivors through that month and much of September mainly to the south coast of Devon, where over 60 were scored in daily watching at Slapton Sands with the last on 6th October. It was well spread elsewhere along the coast and inland to Dartmoor, but we have only one record on the north coast, at Combe Martin on 2nd September. They were also common in both east and west Cornwall. Five were seen together at Land's End on 25th October and the last at Par on 12th November may have been late immigrants. Eastwards it was fairly numerous in Dorset, where 24 were counted at Portland Bird Observatory and as many elsewhere. But there were only two each in Hampshire and West Sussex and none in Kent or Essex, though two at Felixstowe, east Suffolk on 15th October.

Inland it was seen in very small numbers only in Wiltshire, Warwickshire, Worcestershire and north to South Yorkshire and Lancashire. There is no clear indication of local breeding. A few were seen in Guernsey. In Northern Ireland less than ten were seen, and in the Republic we know of only about a dozen. The main influx appears to have been wholly from the south-west, with little if any association with other immigrant species.

The Red Admiral was first reported at Ventnor, Isle of Wight in early January and at Swithian, West Cornwall on 21st January. These may have been winter survivors, but there was a small but clear cut influx to the south-west late in March, from which a female was watched as it laid eggs at Pershore, Worcestershire on 30th March, and another, more general, in the third week of May which gave its first record to Canna in the Inner Hebrides. The usual invasion beginning on 16th June was large and very widespread through many English counties to Aberdeen, Caithness, Orkney and again the Isle of Canna in Scotland. Survivors from it probably accounted for scattered records in much of July, but arrivals began again in force in its last ten days and continued well into August, when it reached its highest numbers. It remained very numerous through much of September and into October. That month contained most of the reported "last dates", but a few stragglers, some still fresh, were about even in Scotland during the first half of November.

Well grown larvae were first noted at Muston, South-east Yorkshire on 27th July and in several other places in early August. These probably resulted from the June invasion, and the regularity of regular records of adults without marked peaks of numbers in August and later suggests that many were locally bred. An interesting exception was the observation at Spurn Head, South-east Yorkshire of *southward* flights on August 18th (107), 19th (117), 21st (146) and again on 23rd September (120), which must surely imply very heavy successful breeding somewhere to the north. It was probably the combination of large immigrations from abroad with extensive internal movement by their native bred offspring which accounts for its appearance in so many inland counties, including many for which we have no dated records. A habit of the species probably previously unnoticed is its drinking during the drought from seawater in August and September (O'Heffernan, *Ent. Rec.* 102: 45).

In Northern Ireland a total of at least 900 Red Admirals was observed from 23rd April to 23rd November (S. Rippey) and in the Republic from him and from other sources we have about 40, to which can be added an estimate of 1,000 seen flying or at rest on walls near the lighthouse at Galley Head, Co. Cork in the afternoon of 29th September, with a single Clouded Yellow. This is the only account of a mass arrival in 1989 which we know of.

The Painted Lady with only about 300 reported sightings made a poor showing after its abundance in 1988. The first were seen singly at East Prawle, South Devon, on 22nd and 24th January, and at Ballaugh, Isle of Man on 21st January. A few came sporadically off the sea to South Devon in April and May, and at the end of that month and in early June there were records curiously spread from Cornwall and Sussex to Yorkshire, Aberdeen and Canna in the Inner Hebrides, with others later which were still mostly of singles and also widely spread, on the western side through Somerset and some of the Midland counties to North Lancashire and again on Canna. But the first numerous influx came only in late July and

provided many of the mounting number of records in July and August. There were others which cannot be clearly dated then and in September and again with other immigrants in late October and into November. The last was seen at Plymouth, South Devon on 24th November. Larvae were found on the island of Colonsay and traces of them on Canna, and one on Wormwood in Warwickshire in late August, but there are also accounts of unsuccessful search for them in several places where adults had been seen. About 70 were reported in Northern Ireland from 25th May to 30th October, mostly in Co. Down, and a few further south. In Guernsey the report is of a fairly good year, with sightings from 18th July to August.

The Hummingbird Hawkmoth clearly benefited from the summer sun, which gave it good mobility and wide distribution after arrival, the first in April and May in Cornwall. It was mostly seen singly at any one time and place, and the more than 240 records which have reached us came from very many observers, spread over some 30 counties north to Cumberland in England and Aberdeen in Scotland. That in Cumberland was seen high on the Pennines at 1,150 feet. It was first seen at St Columb, 27th March and Marazion, 1st April, in West Cornwall. There were several others in April and May and in June the numbers rose to 20. July and August was its time of abundance. Numbers dropped away after mid September and through October, and the only record in November was at St Germans, East Cornwall, 11th November. In Guernsey nine were recorded at seven sites from 11th July to 21st September.

Larvae were found in Kent at Dungeness on 25th July and Greatstone Dunes on 2nd August; in Sussex on White Bedstraw in Friston Forest, 25th July; South-east Yorkshire at Flamborough and Filey, 28th and 29th August; and in Somerset at Berrow, eggs from a female on 1st August hatched 5th August, gave a pupa on 28th August and imago emerged 26th September. If this was typical of development in the wild it seems likely that some of the later moths were locally bred.

In Northern Ireland Hummingbird Hawks were seen in Co. Antrim, Co. Down, Co. Tyrone, Co. Armagh and Co. Fermanagh from June to mid September; in the south regularly in late July in Co. Cork and in Co. Kerry.

The Dark Sword-grass (*Agrotis ipsilon* Hufn.) had an outstanding year, with c. 3,500 covered by our records. The big numbers were registered in light traps which were regularly operated throughout the season, of which the two at Bradwell-on-Sea, Essex scored 1,065 and those in Dorset at Portland Bill 657, and at Durlston Country Park 932. Two which were seen at Monmouth and in the Isle of Wight on 4th and 10th January may have been autumn remnants. Averages of about 30 in March, April and May were not exciting, but the second half of July gave sudden abundance. This continued in August and reached its highest in September. Numbers dropped to about 500 in October, and there were still many in November, with the last at Bradwell-on-Sea on 7th December. The dating of records

suggests that there was a considerable influx with other immigrants in late October. There were no reports of the larva, which feeds cryptically at or below ground level. But past rearing in captivity from eggs laid on 9th July gave moths from 25th to 30th September. In the warmth of 1989 there should have been time for early immigrants to produce moths in the wild before the winter; but there is no evidence that they did so.

Despite its high total numbers, recorded distribution was only to about 20 counties, only six of which were inland. The large numbers were essentially south and east coastal. In Northern Ireland we have only four records, from Co. Down and Co. Armagh.

The Pearly Underwing (*Peridroma saucia* Hb.), which often comes with *Agrotis ipsilon*, had a total of nearly 400 with much the same pattern of timing and reverse of the scarcity of the previous year. One was seen on 1st January (S.A. Knill-Jones, *Ent. Gaz.* 40: 186). There were two at Ronague, Isle of Man on 23rd March, but nowhere many until the end of June, and it shared only weakly in the general immigration of late July. Numbers rose sharply in August and reached about 200 in September with good continuance in October and November, with the last in South Wiltshire on 21st November. Distribution was broadly similar to that of *Agrotis ipsilon*, but only to 17 counties with none north of South-east Yorkshire and inland only in Berkshire, Nottinghamshire, Warwickshire and South Wiltshire. In the Isle of Man it appeared at one site on six nights from 7th to 28th September, and in Ireland twenty specimens were recorded in Co. Cork on 9th and 10th August.

The Silver Y (*Autographa gamma* L.) was as usual the commonest nocturnal immigrant, but the dateable records suggest that it was considerably less numerous in most months than in 1988, and this is supported by comments on its scarcity in several places both coastal and inland. In 1989, a few widely scattered, were reported in the first week of January which may have been survivors from the autumn. A few noted at the end of March were part of a small immigration with other species, and between 20th and 27th May there were over 80, some of them as far north as South-east Yorkshire and the Isle of Man. Thereafter numbers were less than in 1988 until a high peak of about 1,850 in September, and about 50 reported in November, with the last at Wash Common, near Newbury, Berkshire and Penzance, Cornwall on 20th November. One was seen with a *M. unipuncta*, on Skye in the Hebrides on 10th October. It was reported abundantly in Berkshire but only in small numbers inland in Nottinghamshire, Northants, Surrey, Warwickshire and Wiltshire, accounting in all for less than 6% of the total dated records. In Guernsey it was seen at eleven sites on about 20 nights; in Northern Ireland in Co. Antrim, Co. Armagh, Co. Down, Co. Fermanagh and in the south at Fountainstown, Co. Cork, but apparently nowhere in large numbers.

The Rush Veneer (*Nomophila noctuella* D. & S.) was very unusually

scarce, with some 560 dated records, less than one-third of those in 1988. As then, there were few in the early months, but though numbers began to rise in July they never approached those of 1988, the total of about 50 in October was conspicuously lower than the high peak of the previous year. It was noted in only 17 counties, including Guernsey. We have no information about it in Ireland.

The Rusty Pearl (*Udea ferrugalis* Hb.) on the other hand, did very well with a total of about 420 dateable records in a curious pattern. It is usually regarded as essentially an autumn immigrant commonest in October and November. But in 1989 the records began with one at Penzance, Cornwall on 25th May, several in June, over 40 in July, and a peak of at least 170 in August. Numbers dropped sharply in September but rose again through October to a lesser peak of over 60 in November. More than half the records came from Cornwall and many from Dorset, otherwise in declining numbers along the south coast to Kent; on the east coast, at Bradwell-on-Sea, in a total of 38, 13 came in a sudden peak on 28th October, but only four were in November. Two in South-east Yorkshire were the most northerly. Inland it was only reported in Berkshire, Warwickshire and Wiltshire. In the Isle of Man it was seen from 6th June to 3rd September, and in Guernsey in good numbers from 20th May to 31st October. In Ireland we have heard only of a few at Fountainstown, Co. Cork, 4th to 8th August, and one at Curracloe, Co. Wexford, 11th September.

The Diamond-backed moth (*Plutella xylostella* L.), which is probably more often ignored than counted, had fewer records than in 1988. The first was at Sparsholt, Hampshire, 1st April and the last at Burghclere, also Hampshire, 31st October, with most in July. It was widely spread, reaching Yorkshire and Aberdeen and Colonsay in Scotland, and in Guernsey it was numerous at ten sites from 25th May to 9th September.

Approximate monthly numbers of dateable records of the commoner immigrants in Britain are given in Table I. All records of the scarcer species are detailed by locality and county in Annexe II and are summarised monthly in Table II. These include some from Ireland but are not a full account for it. It brings out very clearly the importance of the great influx of the scarcer Wainscot (*Mythimna*) species, already referred to. The White Speck (*M. unipuncta*) with over 500 was far more plentiful than ever known before. The White Point (*M. albipuncta*) and the Cosmopolitan (*M. loreyi*) were similar cases. The Vestal (*R. saccharia*), about 280, also shared in these influxes, but was not more numerous than frequently in the past. So did some other scarce species, making a total with the ten commoner species of 29 immigrants in all for this autumn period. Apart from this it was a year of frequent immigrations usually in small numbers. Those in late July and early August provided most of the rarities. Origins must be speculative, but France or Spain are the most probable. It is significant that none of the sub-tropical species which sometimes reach us from north

Africa were reported, and there is no clear indication of arrivals across the North Sea from Scandinavia.

The number of our recorders has now risen again to about 180, with records sent directly or indirectly to us or drawn from other publications. We are very grateful for these, and we thank especially those who provided the results of detailed daily observations or moth trapping over much of the season. We have again, as usual, adopted the Watsonian system of counties and their vice-counties as our basis, and we ask recorders to do so where this differs from their postal addresses. The history and advantages of this system have recently been discussed by M.G. Morris (*Ent. Rec.* **102**: 25-30).

(to be concluded)

***Lomographa* species (Lep.: Geometridae) and *Eriogaster lanestris* Linn. (Lep.: Lasiocampidae) overwinter fully developed in the pupa.**

I read with interest Adrian Riley's note on overwintering pupae of *Chloroclystis v-ata*, some of which had fully developed moths inside (*Ent. Rec.* **102**: 38). I have experience of breeding *Lomographa temerata* D. & S. and *L. bimaculata* Fabr. In both species the wing markings of the moths become clearly visible through the pupal skin in the autumn. They overwinter at this stage with the moth apparently fully formed and hatch the following summer. I have only bred very small numbers of these species but they have all developed as described. I suspect that these *Lomographa* species always overwinter in this way.

An entry in my notebook on 12th December 1977 states that I had four *Eriogaster lanestris* pupae. Two male and one female pupae had fully formed moths inside and one female did not but was still alive. Two males hatched on 26th March 1978 but the female pupae died. South (*The moths of the British Isles*) states that this species may overwinter for two or three years and has been known to emerge after seven years. He states that the moth is said to be fully developed within the chrysalis all the time.— Dr B.P. HENWOOD, 4 The Paddocks, Abbotskerwell, Newton Abbot, Devon.

***Hippotion celerio* L. (Lep.: Sphingidae) Silver-striped Hawk-moth in Dorset.**

On the night of 26th/27th September 1989, Dick Chatelain and I operated several mv lights on the cliff tops overlooking Swanage Bay, Dorset. Favourable weather conditions and reports of migrant activity in the area boded well, but around midnight, after five hours of trapping, with a single *Mythimna albipuncta* D. & S. being the only possible immigrant our optimism had distinctly started to wane. Two hours later when even the resident species had ceased to appear we decided to call it a night.